



A case independent approach on the impact of climate change effects on combined sewer system performance

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Year: 2009
Journal: Water Science and Technology : A Journal of The International Association on Water Pollution Research. 60 (6): 1555-1564

Abstract:

Design and construction of urban drainage systems has to be done in a predictive way, as the average lifespan of such investments is several decades. The design engineer has to predict many influencing factors and scenarios for future development of a system (e.g. change in land use, population, water consumption and infiltration measures). Furthermore, climate change can cause increased rain intensities which leads to an additional impact on drainage systems. In this paper we compare the behaviour of different performance indicators of combined sewer systems when taking into account long-term environmental change effects (change in rainfall characteristics, change in impervious area and change in dry weather flow). By using 250 virtual case studies this approach is - in principle - a Monte Carlo Simulation in which not only parameter values are varied but the entire system structure and layout is changed in each run. Hence, results are more general and case-independent. For example the consideration of an increase of rainfall intensities by 20% has the same effect as an increase of impervious area of +40%. Such an increase of rainfall intensities could be compensated by infiltration measures in current systems which lead to a reduction of impervious area by 30%. © IWA Publishing 2009.

Source: <http://dx.doi.org/10.2166/wst.2009.520>

Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Researcher

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Precipitation

Climate Change and Human Health Literature Portal

Geographic Feature:

resource focuses on specific type of geography

Freshwater, Urban

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content